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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,852	10/30/2003	Nedim Erkocevic	N.ERKOCEVIC 8	8088

47396 7590 03/22/2005

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EXAMINER
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AL NAZER, LEITH A

ART UNIT	PAPER NUMBER
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2821

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/696,852	ERKOCEVIC, NEDIM	
	<b>Examiner</b>	<b>Art Unit</b>	
	Leith A Al-Nazer	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/09/04, 09/28/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because reference number 130 is not shown in figure 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 3, 13, 14, 26, and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 3, 13, 14, 26, and 27 recite "said feed line". There is a lack of antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-5, 10, 11, 25-29, 34, and 35 are rejected under 35 U.S.C. 102(a) as being unpatentable by U.S. Patent No. 6,515,629 to Kuo et al.

With respect to claim 1, Kuo teaches a dual-band antenna comprising a substrate (10); an inverted F antenna printed circuit (42) supported by the substrate and tuned to resonate in a first frequency band; and a monopole antenna printed circuit (40) supported by the substrate, connected to the inverted F antenna printed circuit and tuned to resonate in a second frequency band (column 4, lines 17-39).

With respect to claims 2 and 26, Kuo teaches the feed line (60) being located on a different plane of the substrate from a radiator of the inverted F antenna printed circuit and the monopole antenna printed circuit being coupled to the feed line (figure 1).

With respect to claims 3 and 27, Kuo teaches the feed line being located on one surface of the substrate, the antenna further comprising a conductive interconnection (64) coupling the feed line to a radiator of the inverted F antenna printed circuit located on an opposing surface of the substrate.

With respect to claims 4 and 28, Kuo teaches a ground plane (20) of the inverted F antenna printed circuit being coupled to and spaced apart from both a radiator of the inverted F antenna printed circuit and the monopole antenna printed circuit (figure 2).

With respect to claims 5 and 29, Kuo teaches a ground plane of the inverted F antenna printed circuit being located on a different plane from the monopole antenna printed circuit (figure 2).

With respect to claims 10 and 34, Kuo teaches the first frequency band being lower than the second frequency band (column 4, lines 17-39).

With respect to claims 11 and 35, Kuo teaches the first frequency band being between about 2.4 GHz and about 2.5 GHz and the second frequency band being between about 5.2 GHz and about 5.8 GHz (column 4, lines 17-39).

With respect to claim 25, Kuo teaches a method of manufacturing a dual-band antenna, comprising forming an inverted F antenna (42) printed circuit on a substrate, the inverted F antenna printed circuit tuned to resonate in a first frequency band; and forming a monopole antenna (40) printed circuit on the substrate, the monopole antenna being connected to the inverted F antenna printed circuit and tuned to resonate in a second frequency band (column 4, lines 17-39).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 6-8 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,515,629 to Kuo et al. in view of U.S. Patent No. 6,100,848 to Hayes.

Claims 6-8 and 30-32 require that the monopole antenna printed circuit comprise first and second traces tuned to differing resonance in the frequency band. Such a configuration is well known in the art, as is evidenced by Hayes (18 and 36 in figure 5). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize a monopole antenna with first and second traces in the system of Kuo. The motivation for doing so would have been to provide means for tuning to a plurality of frequencies.

9. Claims 9 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,515,629 to Kuo et al. in view of U.S. Patent No. 6,567,048 to McKinzie, III et al. or U.S. Patent Application Publication No. 2002/0004125 to Ostrovsky.

Claims 9 and 33 require the substrate be composed of a higher loss material and have a plurality of lower loss regions located proximate a radiator of the inverted F antenna printed circuit and the monopole antenna printed circuit. It is well known in the art that, in order to radiate efficiently, antennas must be formed in low loss materials rather than high loss materials, as is suggested by McKinzie (column 2, lines 23-33) and Ostrovsky (paragraphs 0002-0013). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to include a plurality of lower loss regions located proximate a radiator of the inverted F antenna printed circuit and the monopole antenna printed circuit. The motivation for doing so would have been to provide a material in which the radiating element could operate efficiently.

10. Claims 12-16 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,515,629 to Kuo et al. in view of U.S. Patent Application Publication No. 2003/0001787 to Clifton or U.S. Patent Application No. 2003/0207668 to McFarland et al.

With respect to claim 12, Kuo teaches a dual-band antenna including a substrate (10), an inverted F antenna printed circuit (42) supported by the substrate and tuned to

resonate in a first frequency band, and a monopole antenna printed circuit (40) supported by the substrate, connected to the inverted F antenna printed circuit and tuned to resonate in a second frequency band. Claim 12 requires wireless networking circuitry and a dual band transceiver coupled to the wireless networking circuitry. Such a configuration is well known in the art, as is evidenced by Clifton (paragraphs 0008-0013) and McFarland (figure 4). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to provide the antenna system of Kuo with the wireless network circuitry and dual-band transceiver of Clifton or McFarland. The motivation for doing so would have been to provide circuitry and an overall system capable of utilizing the dual-band feature of the antenna taught by Kuo.

With respect to claim 13, Kuo teaches the feed line (60) being located on a different plane of the substrate from a radiator (42) of the inverted F antenna printed circuit and the monopole antenna printed circuit (40) being coupled (62) to the feed line (figure 1).

With respect to claim 14, Kuo teaches the feed line (60) being located on one surface of the substrate, the antenna further comprising a conductive interconnection (64) coupling the feed line to a radiator of the inverted F antenna printed circuit located on an opposing surface of the substrate.

With respect to claim 15, Kuo teaches a ground plane (20) of the inverted F antenna printed circuit being coupled to and spaced apart from both a radiator of the inverted F antenna printed circuit and the monopole antenna printed circuit (figure 2).



With respect to claim 16, Kuo teaches a ground plane of the inverted F antenna printed circuit being located on a different plane from the monopole antenna printed circuit (figure 2).

With respect to claim 21, Kuo teaches the first frequency band being lower than the second frequency band (column 4, lines 17-39).

With respect to claim 22, Kuo teaches the first frequency band being between about 2.4 GHz and about 2.5 GHz and the second frequency band being between about 5.2 GHz and about 5.8 GHz (column 4, lines 17-39).

Claims 23 and 24 require a second dual-band antenna be coupled to the dual-band transceiver. At the time of the invention, it would have been obvious to one having ordinary skill in the art to take the systems Kuo, Clifton, and McFarland, and add a second dual-band antenna. The motivation for doing so would have been to provide more operating frequencies.

11. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,515,629 to Kuo et al. in view of U.S. Patent Application Publication No. 2003/0001787 to Clifton or U.S. Patent Application No. 2003/0207668 to McFarland et al. as applied to claims 12-16 and 21-24 above, and further in view of U.S. Patent No. 6,100,848 to Hayes.

Claims 17-19 require that the monopole antenna printed circuit comprise first and second traces tuned to differing resonance in the frequency band. Such a configuration is well known in the art, as is evidenced by Hayes (18 and 36 in figure 5). Therefore, at

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the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize a monopole antenna with first and second traces in the system of Kuo. The motivation for doing so would have been to provide means for tuning to a plurality of frequencies.

12. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,515,629 to Kuo et al. in view of U.S. Patent Application Publication No. 2003/0001787 to Clifton or U.S. Patent Application No. 2003/0207668 to McFarland et al. as applied to claims 12-16 and 21-24 above, and further in view of U.S. Patent No. 6,567,048 to McKinzie, III et al. or U.S. Patent Application Publication No. 2002/0004125 to Ostrovsky.

Claim 20 requires the substrate be composed of a higher loss material and have a plurality of lower loss regions located proximate a radiator of the inverted F antenna printed circuit and the monopole antenna printed circuit. It is well known in the art that, in order to radiate efficiently, antennas must be formed in low loss materials rather than high loss materials, as is suggested by McKinzie (column 2, lines 23-33) and Ostrovsky (paragraphs 0002-0013). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to include a plurality of lower loss regions located proximate a radiator of the inverted F antenna printed circuit and the monopole antenna printed circuit. The motivation for doing so would have been to provide a material in which the radiating element could operate efficiently.

***Citation of Pertinent References***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patent documents further show the state of the art with respect to dual-band antennas:

- a. U.S. Patent Application Publication No. 2004/0212545 to Li et al.
- b. U.S. Patent Application Publication No. 2004/0198293 to Sadler et al.
- c. U.S. Patent Application Publication No. 2004/0027288 to Okubora et al.
- d. U.S. Patent Application Publication No. 2002/0175866 to Gram
- e. U.S. Patent No. 6,734,825 to Guo et al.
- f. U.S. Patent No. 6,614,400 to Egorov
- g. U.S. Patent No. 5,420,599 to Erkocevic
- h. European Patent Application No. EP1263083 A2 to Iwai et al.

***Communication Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A Al-Nazer whose telephone number is 571-272-1938. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**SHIH-CHAO CHEN**  
**PRIMARY EXAMINER**

LA